



Cross-sectional Study

Patients response to pre-operative counseling for the appropriate type of bariatric surgery



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ARTICLE INFO

Keywords:

Obesity
Preoperative
Counseling
Sleeve gastrectomy
Roux-en-Y gastric bypass

ABSTRACT

Introduction: Obesity is a major cause of metabolic and health disorders like diabetes mellitus (DM) and gastro esophageal reflux disease (GERD). Patients usually offered a professional preoperative consultation and objective information regarding the bariatric surgery type and the advantages and disadvantages of each type for best outcome and satisfaction.

Purpose: To study the patient response to preoperative advice and recommendation and the patient's decision to undergo the recommended bariatric surgery.

Objective: To determine the statistical significance of preoperative recommendation and the patient personal choice of the type of bariatric surgery.

Materials and methods: This original article is a cross-sectional survey of 188 patients underwent bariatric surgery between February 2015 and December 2018 in the General Surgery Departments – Bariatric Surgery Clinics in Jordan University Hospital affiliated to the College of Medicine in the University of Jordan and Al Karak Governmental Hospital affiliated to the College of Medicine in Mutah University. 144 patients underwent longitudinal sleeve gastrectomy (LSG) and 44 patients underwent Roux en-Y gastric bypass (RYGB) as the recommended type of surgery for the selected comorbidities diabetes, gastroesophageal reflux disease, or both.

Results: Of 188 patients data collected, 54 patients who should had undergone RYGB as the recommended type of surgery, preoperative counseling did not have a significant effect on their decision to undergo the appropriate type of bariatric surgery. The number of patients who had pre-operative recommendation = 37 (68.5%). Out of these, only 15 patients choose the surgical team recommended surgery; *p*-value 0.183, odds ratio 2.22, (95% confidence interval (CI) = 0.6–8.12).

Conclusion: Preoperative surgical procedure type advice did not have a significant effect on patients' choice of the recommended bariatric procedure.

1. Introduction

Obesity, defined as body mass index (BMI) over 30, is a major clinical and public health problem [1]. The prevalence of obesity has raised to unprecedented levels over the last two decades in both genders worldwide with concomitant health complications [2] such as hypertension,

hyperlipidemia, type 2 diabetes mellitus (T2DM), gastroesophageal reflux disease (GERD), obstructive sleep apnea, cancer, osteoarthritis, cardiovascular diseases, anxiety, and depression.

Bariatric surgery patient evaluation for surgery is directed toward gathering data that may decide the patient's candidacy for bariatric surgery in the first place and which procedure is of his/her best interest according to the surgical team preference and experience. During the

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<https://doi.org/10.1016/j.amsu.2021.102206>

Received 9 November 2020; Received in revised form 28 February 2021; Accepted 1 March 2021

Available online 6 March 2021

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Abbreviations

T2DM	type 2 diabetes mellitus
GERD	gastro esophageal reflux disease
LSG	laparoscopic sleeve gastrectomy
RYGB	Roux-en-Y-gastric bypass
BPD/DS	biliopancreatic diversion with duodenal switch
BMI	Body mass index
CI	confidence interval

initial evaluation the patient should be evaluated physically and psychologically and full detailed explanation of the available surgical procedures, their cost, time, and outcomes provided. There are many available surgical bariatric interventions; the most well-known include gastric banding, laparoscopic sleeve gastrectomy (LSG), laparoscopic Roux-en-Y-gastric bypass (RYGB), and biliopancreatic diversion with duodenal switch (BPD/DS).

The prevalence of people with or those at higher risk of developing T2DM have increased over the last decade due to obesity, sedentary lifestyle, presence of other comorbidities such as hypertension, hyperlipidemia and other metabolic diseases and poor nutritional habits. The prevalence of T2DM in obese patients in Jordan is 28.1% [3]. GERD is a common complication in bariatric patients. LSG appears to increase the incidence of GERD in patients undergoing the procedure, possibly because of increased intragastric pressure and angle of His distortion in spite of the fact that LSG can improve the conditions of T2DM, hypertension and sleep apnea [4]. However, RYGB is more effective in relieving GERD symptoms as it provides significant weight loss without altering the anatomy of the LES and increasing intragastric pressure; and, most importantly, the amelioration of T2DM and improvements in insulin resistance and glucose tolerance is well documented after RYGB [5]. In this psycho-social cross-sectional survey, the response of patients to choose RYGB as their bariatric surgery from the authors point of view evaluated for statistical significance.

2. Materials and Methods

A cross-sectional retrospective survey of 188 patient’s cohort operated between February 2015 and December 2018 in the General Surgery Departments – Bariatric Surgery Clinics in Jordan University Hospital affiliated to the College of Medicine in the University of Jordan and Al Karak Governmental Hospital affiliated to the College of Medicine in Mutah University via phone interview questionnaire with confirmation of patient’s identity after two years of the procedure at least. 144 patients underwent LSG and 44 underwent RYBP. All patients met the following criteria for bariatric surgery: BMI >40 kg/m² or >35 kg/m², with co morbidity, and failed conservative treatment. The patients were followed for two years at least. Informed consent was obtained from all participants. Revision bariatric surgery excluded. IRB Committee approval in the College of Medicine in the University of Jordan obtained and unique identifying number (UIN) 10-2021-4216 given. The study research has been reported in line with the STROCSS criteria [6].

The questionnaire included the patient age, marital status, education, and insurance status, co morbidities such as ischemic heart disease, obstructive sleep apnea, hypertension, dyslipidemia, T2DM, asthma, GERD, chronic back pain, depression, anxiety and eating disorders. Patients questioned specifically about their knowledge about bariatric surgery, source of their knowledge, types of operations and preoperative consultation factors influencing patient decision, and type of surgery the patient underwent, cause of surgery, knowledge about T2DM and GERD and the effect of bariatric surgery on both comorbidities, doctors explanation of the procedures and the specific complications of each. Body mass index (BMI) was calculated based on pre-surgical weight and

height.

T2DM selected as the most prominent co morbidities in our patients due to higher frequency; and GERD due to anatomical affection. Specific explanation provided included the institutional experience of better results regarding T2DM improvement and LSG may worsen GERD symptoms.

The RYGB explained to the patients as creating a small proximal gastric pouch usually less than 30 cm³ based on the lesser curve, an alimentary limb about 12 mm in diameter, and a common limb that has ranged from 60 to 250 cm or more in length to affect malabsorption depending on intraoperative finding and surgeon experience and decision. Sleeve gastrectomy is explained as laparoscopic division of the vasculature along the greater curvature of the stomach to His angle facilitating gastric fundus complete resection. Stomach resection is done 6–10 cm proximal to the pylorus, leaving 150 to 200 mL of the antral remnant to facilitate gastric emptying.

Finally, comparison made between the specific preoperative procedure recommended by surgical staff and the procedure the patient preferred. Statistical analysis carried out using Fisher’s exact test (p-value considered significant if < 0.05) and odds ratio (95% confidence interval) to check association between recommended preoperative counseling labeled here as choosing RYGB as the recommended surgery to reduce weight and treat T2DM and GERD.

3. Results

The clinical and demographic characteristics of the 188 patients enrolled in the survey are shown in Table 1. Most of the patients were young or middle-aged females. About 20% of the patients did not know that surgery is an option to treat morbid obesity and its complications. The knowledge came to their attention for the first time by their caring doctors. On the other hand, other patients accessed this information by more than one route such as friends and social media. Nearly 27% of the patients had documented depression and/or anxiety. The patient with BMI 30 was operated with LSG due to T2DM and emotional eating and anxiety.

The data of 54 patients who should had undergone RYGB as the recommended type of surgery for their co morbid conditions such as diabetes, GERD, or both shown in Table 2. The actual number of patients

Table 1
Some clinical and demographic features of 188 patients participated in the questionnaire.

Gender	Males 52 (28%)	
	Females 136 (72%)	
Average age	37 years	
Average Weight	Min: 15	Max: 66
	125 kg	
BMI pre op	Min 81	Max 230
	46	
BMI post op (after 2 years)	Min 30	Max 73.4
	31	
T2DM and/or GERD	54 patients	
	50 patients	
Psychiatric illness	50 patients	
Did the patient know about surgical options?	Yes 152	No 36
Source of knowledge about surgery	Doctor	36
	Relatives	77
	Internet	24
	Social media	24
	Magazines and newspapers	27
	Friends	19

BMI: Body mass index, T2DM: Type 2 diabetes mellitus, GERD: Gastroesophageal reflux disease.

Table 2

Patients for whom preoperative procedure results explained and not explained and their choice of bariatric surgery in relation to their associated comorbidities (DM2/GERD/Both).

	RYGB group			LSG group			Total
	T2DM (n = 3)	GERD (n = 11)	Both (n = 5)	DM2 (n = 13)	GERD (n = 18)	Both (n = 4)	
RecommendationsExplained	2	9	4	12	8	2	37
RecommendationsNotExplained	1	2	1	1	10	2	17
Total	19			35			54

T2DM: Type 2 diabetes mellitus, GERD: Gastroesophageal reflux disease, LSG: laparoscopic sleeve gastrectomy, RYGB: Roux-en-Y-gastric bypass.

who accepted the preoperative advice and underwent RYGB was 19 (35.2%), those who underwent LSG was 35 (64.8%). The number of patients for whom adequate preoperative explanation and recommendation given was 37 (68.5%), the number of patients who did not preoperative explanation and recommendation was 17 (31.5%).

Statistical analysis showed that pre-operative explanation and recommendation did not have a significant effect on patient’s own decision to undergo the surgical team recommended type of bariatric surgery; *p*-value 0.183, odds ratio 2.22, (95% CI = 0.6–8.12), relative risk 1.26, (95% CI = 0.89–1.77), as shown in Table 3.

Subgroup of patients with diabetes (n = 16) revealed that preoperative counseling did not have a significant effect on their decision to undergo the recommended type of bariatric surgery; *p* value 0.975, odds ratio 0.17 (95% CI = 0.01–3.89), relative risk 0.72, (95% CI = 0.32–1.63) presented in Table 4.

Nonetheless, although the subgroup of patients with GERD (n = 29) had stronger association with the recommended counseling compared to subgroup of patients with DM (n = 16) it didn’t reach statistical significance, *p* value 0.053; odds ratio 5.62 (95% CI = 0.94–33.77), relative risk 3.18 (95%, CI = 0.83–12.1) as detailed in Table 5.

Finally, subgroup of patients with both DM and GERD (n = 9) also showed that preoperative surgery type advice did not have a significant effect on patients’ decision to undergo the recommended type of bariatric surgery; *p*-value 0.405; odds ratio 4.0, (95% CI = 0.21–75.66), relative risk 1.6, (95% CI = 0.55–4.68) as shown in Table 6.

4. Discussion

Obesity is a serious disease with devastating effects on health, productivity, quality of life and longevity. The data regarding how patients choose one bariatric procedure over another are scant. The aim of this survey is to study the association between doctor-patient counseling and patient’s decision to undergo the recommended bariatric surgery. The facilitated multiple access to medical information made patients less complaint to doctor-patient counseling compared to the earlier practice.

As a principle, bariatric surgery procedure offered to the patient should handle nutritional and psychiatric history, past surgical/medical history, patient expectations and satisfaction, surgeon experience to treat most known complications related to the procedure. In other words, the final decision is geared by the surgeon experience and the patient preference [7]. There is no single best operation for all patients, an operation good for one patient may be unsuitable for another, and there is scarcity of well controlled, randomized trials comparing different bariatric operations that further complicates the decision for a

Table 3

Statistical analysis using Fisher exact test to compare the results between patients who had preoperative explanation and recommendations and their counterpart and their decision of the type bariatric surgery.

	RYGB	LSG	Total	Fisher (<i>p</i> - value)	Odds Ratio (0.95 CI)
RecommendationsExplained	15	22	37	0.18	2.22 (0.60–8.12)
RecommendationsNotExplained	4	13	17		
Total	19	35	35		

LSG: laparoscopic sleeve gastrectomy, RYGB: Roux-en-Y-gastric bypass.

gold standard procedure for a specific patient. However, patients should have a complete multidisciplinary investigation to provide them the best weight loss and the treatment of certain co-morbidities.

Nowadays patients are well-informed about bariatric surgery options and have gained information from friends and family members, support groups, magazines and newspaper, television, and especially the internet, where they accessed medical web sites, chat rooms, and even professional materials [8]. In this report, patient most common source of information was their relatives, this can be explained by the tight social relationships in the Jordanian community. The majority of patients (81%) knew that there are different types of bariatric operations with different anatomical consequences, operative time and follow up, and economic cost, with LSG being the least time and cost-demanding accordingly.

Bariatric surgery is better than medical therapy in controlling hyperglycemia and soothing cardiac risk factors in diabetic patients. Recently, LSG and RYGB have been the most commonly performed bariatric surgeries globally due to their safety, efficacy and durability [9]. LSG has surpassed RYGB in the recent years especially in females with milder metabolic complications and lower BMIs [10], although RYGB is superior in achieving weight reduction and controlling GERD and improving T2DM even if there will be relapse of T2DM after 10 years or more according to new studies [11].

Although studies addressing the effect of preoperative counseling on decision making regarding bariatric surgery type are rare, studies showing the effect of counseling on the outcome of the surgery, specifically, degree of weight loss are particularly common. For example, El Chaar et al. [12] showed that patient compliance with preoperative appointments, an indication of patient counseling, had no effect on the excess weight loss of the patients. This parallels the result of this study, showing that counseling plays a minor role in the selection and outcome of the surgery.

Psychiatric problems are also common among bariatric surgery candidates [13], in this series about 27% of patients had depression and/or anxiety, in our opinion this can affect their judgment regarding the best surgery type. Courcoulas et al. [14] examined preoperative psychosocial factors and their connection with weight loss after bariatric surgery. Their results showed that baseline variables have limited predictive value for an individual’s chance of a successful weight loss outcome following bariatric surgery. Lin et al. [15] demonstrated that difficulties in surgical decision making and associated factors among elective surgical patients were 80% of the 71 patients who underwent elective surgery, taking surgical decision either personally or in collaboration with their family and/or physician. King et al. [16]

Table 4

Statistical analysis using Fisher exact test to compare the results between T2DM patient's subgroup who had preoperative explanation and recommendations and their counterpart and their decision of the type bariatric surgery. LSG: laparoscopic sleeve gastrectomy, RYGB: Roux-en-Y-gastric bypass.

	RYGB	LSG	Total	Fisher (p value)	Odds Ratio (0.95 CI)
RecommendationsExplained	2	12	14	0.97	0.17 (0.01–3.89)
RecommendationsNotExplained	1	1	2		
Total		3	13		16

Table 5

Statistical analysis using Fisher exact test to compare the results between GERD patient's subgroup who had preoperative explanation and recommendations and their counterpart and their decision of the type bariatric surgery. LSG: laparoscopic sleeve gastrectomy, RYGB: Roux-en-Y-gastric bypass.

	RYGB	LSG	Total	Fisher (p value)	Odds Ratio (0.95 CI)
RecommendationsExplained	9	8	17	0.053	5.62 (0.94–33.77)
RecommendationsNotExplained	2	10	12		
Total	11	18	29		

Table 6

Statistical analysis using Fisher exact test to compare the results between T2DM and GERD patient's subgroup who had preoperative explanation and recommendations and their counterpart and their decision of the type bariatric surgery. LSG: laparoscopic sleeve gastrectomy, RYGB: Roux-en-Y-gastric bypass.

	RYGB	LSG	Total	Fisher (p value)	Odds Ratio (0.95 CI)
RecommendationsExplained	4	2	6	0.18	4.0 (0.21–75.66)
RecommendationsNotExplained	1	2	3		
Total	5			4	9

concluded that lack of patient interest and the patient's doubts of the benefits of the counseling are obstacles in clinical counseling of the patients. Preoperative group counseling did not even increase compliance to necessary lifestyle modifications [17].

5. Conclusion

Preoperative counseling did not affect the patient choice of recommended bariatric procedure favorable to his/her co morbidities, namely GERD or LSG. It seems that the contributing factors for that mismatched choice between doctors and patients is related mostly to psychosocial, educational and economic factors.

Provenance and peer review

Not commissioned, externally peer-reviewed.
This article is not funded from any source.
The authors disclose no conflict of interest.

Declaration of competing interest

All the authors of this manuscript disclose no recent or potential conflict of interest.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.amsu.2021.102206>.

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